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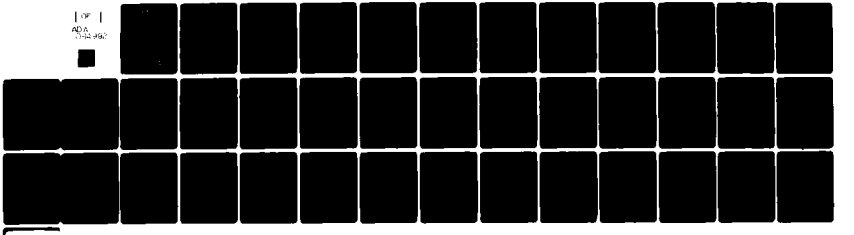

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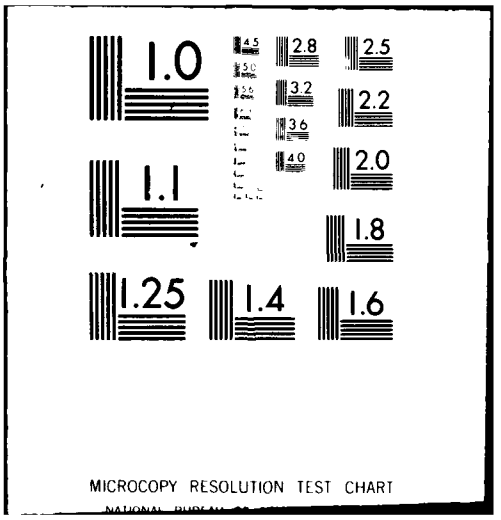
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TNF S^2C^3 PROGRAM MANAGEMENT PLAN, FY 80 ANNEX

The BDM Corporation
7915 Jones Branch Drive
McLean, Virginia 22102

30 November 1979

Final Report for Period 27 November 1978—30 November 1979

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This volume provides the FY 80 Annex to the basic TNF S^2C^3 Program Management Plan. Specifically, it provides a description of the candidate program activities for FY 80.

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PREFACE

This documentation for the Theater Nuclear Force (TNF) Survivability and Security (S^2) Command, Control and Communications Program has been prepared for the Defense Nuclear Agency by the BDM Corporation under Contract No. DNA00179C0090.

This document consists of the FY 80 Annex to the basic TNF S^2C^3 Program Management Plan. It contains discussions of the FY 78 and 79 program activities and results, and describes candidate program tasks for FY 80.

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INTRODUCTION

1.1 BACKGROUND

The Department of Defense Theater Nuclear Force (TNF) Survivability and Security (S^2) Program has been undertaken by the Defense Nuclear Agency to enhance theater nuclear force effectiveness through improved survivability and security. The command, control and communications (C^3) issues of TNF S^2 are specific C^3 deficiencies which impact TNF S^2 adversely, paired with specific actions, plans, or programs proposed as correctives. These issues focus on a variety of operational entities, command and support functions, political and military requirements, and supporting C^3 systems. The specific supporting roles and the C^3 requirements vary with the operational circumstances and the perceived threat. In general, TNF C^3 systems and procedures are required:

In Peacetime. To control the movement, storage, and maintenance of nuclear weapons; to monitor weapon and delivery system status; and to insure a secure and timely alerting network.

In Crisis Situations. To control the storage, maintenance, and deployment of nuclear weapons; to monitor weapon and delivery system status (including readiness and dispersal); and to insure a secure and timely alerting network.

In Conventional Warfare Situations. To control the storage, maintenance, deployment, and relocation of nuclear weapons, as required; to monitor weapon and delivery system status (including state of readiness, location, availability of critical support, and attrition rates); and to insure prompt tactical warning.

In Tactical or General Nuclear War Situations. To control the storage, maintenance, deployment, relocation, loading, and employment of nuclear weapons, as required and directed; to provide for the secure, expeditious exchange of messages in the selective

release (SELREL) process and for the transmission and receipt of appropriate release authority and execution orders; and to monitor weapon and delivery system status and availability.

1.2 OBJECTIVE

The objective of the TNF S^2 Command, Control and Communications (TNF S^2C^3) Program is to enhance TNF effectiveness through near-term and long-term improvements in the survivability and security of those U.S. national, non-U.S. national, and NATO C^3 systems and procedures which support the theater nuclear force. The primary focus of the program is on development of realistic long-term solutions and concepts which will provide survivable, secure and reliable TNF C^3 systems and facilities for the future. For the near and midterm, the program addresses critical deficiencies with a view toward identification and validation of interim solutions. In this respect, the near-and midterm aspects of the TNF S^2C^3 program are addressed in the context of related efforts already underway (particularly in the areas of overall TNF architecture and custodial communications). The TNF S^2C^3 program is designed to be fully supportive of and complementary to such efforts. Specifically, the TNF S^2C^3 program provides for an in-depth examination of the survivability and security aspects of those C^3 systems and procedures associated with the deployment, maintenance, and employment of theater nuclear forces. Therefore, the program for C^3 is consistent with and supportive of the overall DoD Theater Nuclear Force Survivability and Security Program (TNF S^2).

The basic concept and overall approach of the TNF S^2 Program provides for early identification of issues and the testing of potential technological and procedural improvements. Consistent with the objectives of the TNF S^2 Program, a major emphasis of the TNF S^2C^3 Program will be the use of operationally realistic testing procedures whenever such testing is feasible and will validate critical areas where major uncertainties exist.

1.3 ACTIVITIES TO DATE

1.3.1 FY 78 Activities

The FY 78 TNF S^2C^3 Program effort was primarily directed toward the development of a comprehensive program management plan which would provide a long-term plan for:

(1) Prioritization of issues;

(2) Test and evaluation of existing, programmed, and planned US/NATO TNF C^3 elements in the context of a full spectrum of operational and threat environments;

(3) Analysis of test results;

(4) Assessment of system survivability and security; and

(5) Validation of technological and other improvements.

The TNF S^2C^3 Program Management Plan was organized to facilitate its use as a management tool. The plan is flexible enough to accommodate the results of evaluation and test as well as changes in the threat, TNF force structure, C^3 systems, political factors, and research and development initiatives as they occur or become available. The plan provided on October 25, 1978 is organized as follows:

Section 1 - Introduction

Section 2 - Systems Baseline

Section 3 - Threat

Section 4 - System Deficiencies

Section 5 - Methodologies for Assessments

Section 6 - Tasks and Schedules

An additional TNF S^2C^3 Program effort during FY 78 involved the initial exploration of alternative survivable C^3 concepts.

1.3.2 FY 79 Activities

The FY 79 TNF S^2C^3 Program activities included:

(1) Coordination and prioritization of a comprehensive set of TNF S^2C^3 issues;

(2) Development and correlation of a compendium of related past and current assessments and programs;

(3) Development and correlation of compendia of relevant exercises, physical tests and computer codes;
(4) Coordination of C^3 activities with overall TNF S^2 Program activities and planning;
(5) Development of operational, functional, security and survivability requirements for the C^3 systems that support the TNF;
(6) Development of appropriate measures of effectiveness to quantify the degree to which C^3 systems meet stipulated requirements;
(7) Continuation of the effort to identify and develop alternative survivable C^3 concepts;
(8) Exploration of C^3 systems concepts to support the Medium Range Ballistic Missile (MRBM) system; and
(9) Consideration of physical security aspects for C^3 systems supporting the TNF.

1.4 TNF S^2C^3 ISSUES

The comprehensive set of TNF S^2C^3 issues identified during the FY 79 Program activities was developed primarily through an examination of the extensive literature which bears upon U.S. national, non-U.S. national, and NATO communications for command and control of the TNF in Europe. This documentary research was supplemented with interviews of a number of responsible officials who were dealing with various aspects of the problem, including representatives of the Services, ASD/ISA, ASD/C^3I, ATSD/AE, DCA, and WSEO. These interviews provided additional information which amplified that found in the pertinent literature and provided the most-up-to date status of various corrective actions and programs already underway. These multiple sources indicated the existence of a widespread consensus regarding major TNF C^3 deficiencies and proposed actions, plans, or programs designed to remedy them. This consensus establishes the present baseline for pursuing the ultimate objective of the TNF S^2C^3 Program, namely enhanced TNF effec-

tiveness through near-term and long-term improvements in those U.S. and NATO C^3 systems and procedures which support the theater nuclear forces.

1.4.1 Issues Identified in FY 79

The specific issues identified in the FY 79 Program include:

(1) Provide reliable, secure, jam-resistant U.S. custodial communications.

(2) Provide Operational Security (OPSEC) for TNF communications.

(3) Provide balanced physical survivability and security to TNF C^3 facilities.

(4) Provide jam resistant, secure communications for control of the TNF.

(5) Provide interoperable secure voice capability between U.S. and NATO elements of the TNF.

(6) Coordinate U.S. and NATO satellite communications programs.

(7) Provide improved restoral/reconstitution capability for TNF communications.

1.4.2 Criteria for Prioritization

Potential criteria for establishing the priority of specific TNF C^3 issues were also developed during the FY 79 Program. The criteria are intended to prioritize such issues in terms of their relative impact upon TNF C^3 effectiveness, TNF survivability and security, and overall TNF effectiveness. Potential criteria were identified under the general categories of system availability, security, and acceptability as follows:

(1) System availability
  (a) Survivability
  (b) Reliability
  (c) Repairability
  (d) Connectivity speed
  (e) Capacity
  (f) Flexibility
  (g) Coverage
  (h) Restorability

(2) Security
    (a) Encryption
    (b) Message intercept
    (c) Message decryption
    (d) Physical security
(3) Acceptability
    (a) Ease of implementation
    (b) Cost of implementation
    (c) Manpower requirements
    (d) Political sensitiorties

The specific issues identified during the FY 79 Program were not prioritized according to the above criteria because of the lack of definitive requirements and MOEs. Instead a rough order of priority was established and the issues ranked in the descending order of importance in which they are listed in paragraph 1.4.1. This rough order of priority was based primarily upon the priority expressed or implied in the various studies and interviews from which the issues were derived. Particular attention was given to the views of operational personnel (especially those in Europe) in determining the relative rank order of the issues.

1.4.3 Planned Issue Evaluation Activities in FY 80

The issues selected for Issue Evaluation activities in FY 80 are derived from the three top priority specific issues identified during the FY 79 Program and listed in Paragraph 1.4.1. The Issue Evaluation Plans (IEPs) and subsequent Issue Evaluations will deal with the following issues:

(1) Insuring Operational Security (OPSEC) for C^3 elements of the TNF.
(2) Insuring survivability for TNF C^3 facilities.
(3) Insuring appropriate C^3 support to the requirement for positive control of U.S. nuclear weapons in Europe.

While there is demonstrable consensus on the urgency of all the specific issues identified during the FY 79 Program, those issues selected for Issue Evaluation Plan development are both derived from the FY 79 Program's highest priority issues and promise particularly significant positive impact upon TNF S^2 and overall effectiveness in the near - and

midterm. New programs sponsored by various agencies are currently underway which deal with major aspects of those issues selected for Issue Evaluation Plan development. Therefore, IEP development as well as the subsequent conduct of the Issue Evaluations will be coordinated closely with the relevant programs to insure maximum mutual benefit and avoid duplication of effort.

1.5 FY 80 ANNEX TO THE BASIC TNF S^2C^3 PROGRAM MANAGEMENT PLAN

The TNF S^2C^3 Program Management Plan has been carefully reviewed to insure its continued relevance to the program objectives and utility as a management tool. It has been determined that the basic structure and essential composition and content of the plan continue to provide a valid framework for the overall TNF S^2C^3 Program. Therefore, this FY 80 Annex to the basic plan focuses on the identification of candidate tasks for FY 80 and follow-on years. Where possible, interrelationships among the various tasks have been highlighted. A proposed schedule for accomplishing the program tasks during FY 80 is also provided in Section 2.

SECTION 2
TASKS AND SCHEDULES

2.1 INTRODUCTION

The TNF S^2C^3 program organization, elements, and overall schedule are detailed in the TNF S^2 Program Management Plan, as revised. The tasks, schedules and milestones for the TNF S^2C^3 Program are derived from and consistent with those presented for the overall TNF S^2 Program. The critical requirements of TNF S^2C^3 program management will be scheduling, budgeting, and integrating the many complex and varied tasks comprising the program. The following paragraphs present a candidate set of tasks to be accomplished during FY 80 and describe additional program requirements for FY 81 through FY 83. The FY 80 task descriptions include preliminary scope estimates and highlight the interrelationships between the proposed tasks.

2.2 TASKS FOR FY 80

Table 2-1 presents candidate TNF S^2C^3 Program tasks for FY 80 and includes preliminary time estimates. Figure 2-1 depicts the interrelationships and interdependencies among the various candidate tasks. Where appropriate, the relationship of specific FY 80 tasks to FY 79 program efforts has been indicated in Figure 2-1.

2.3 DESCRIPTION OF FY 80 TASKS

The candidate tasks for FY 80 are described in Appendix 1.

2.4 TASKS FOR FY 81-83

The tasks for FYs 81 through 83 will be determined in large measure by the results of the FY 80 efforts. Throughout the conduct of the pro-

Table 2-1. Candidate TNF S^2C^3 Program tasks for FY 80.

	TASK	ESTIMATED TIME (MONTHS)
1.	TNF S^2C^3 Program Analysis, Assessment, Coordination and Integration	12
2.	Evaluate Alternative Nuclear Survivable C^3 Concepts for TNF	12
3.	Support the development of the OSD System Improvement Plan (SIP) for TNF C^3 in Europe.	12
4.	Integrate TNF S^2C^3 Requirements and MOEs with Overall TNF S^2 MOE Structure	12
5.	Develop Issue Evaluation Plan (IEP) to Address the Issue of Insuring Operational Security (OPSEC) for C^3 Elements of the TNF; and Conduct Issue Evaluation	12
6.	Develop Issue Evaluation Plan (IEP) to Address the Issue of Insuring Survivability for TNF C^3 Facilities; and Conduct Issue Evaluation	12
7.	Develop Issue Evaluation Plan (IEP) to Address the Issue of Insuring Appropriate C^3 Support to the Requirement for Positive Control of U.S., Nuclear Weapons in Europe and Conduct Issue Evaluation	12
8.	Evaluate C^3 Concepts for Potential MRBM Deployment	9
9.	Evaluate C^3 Concepts for Potential GLCM Deployment	6

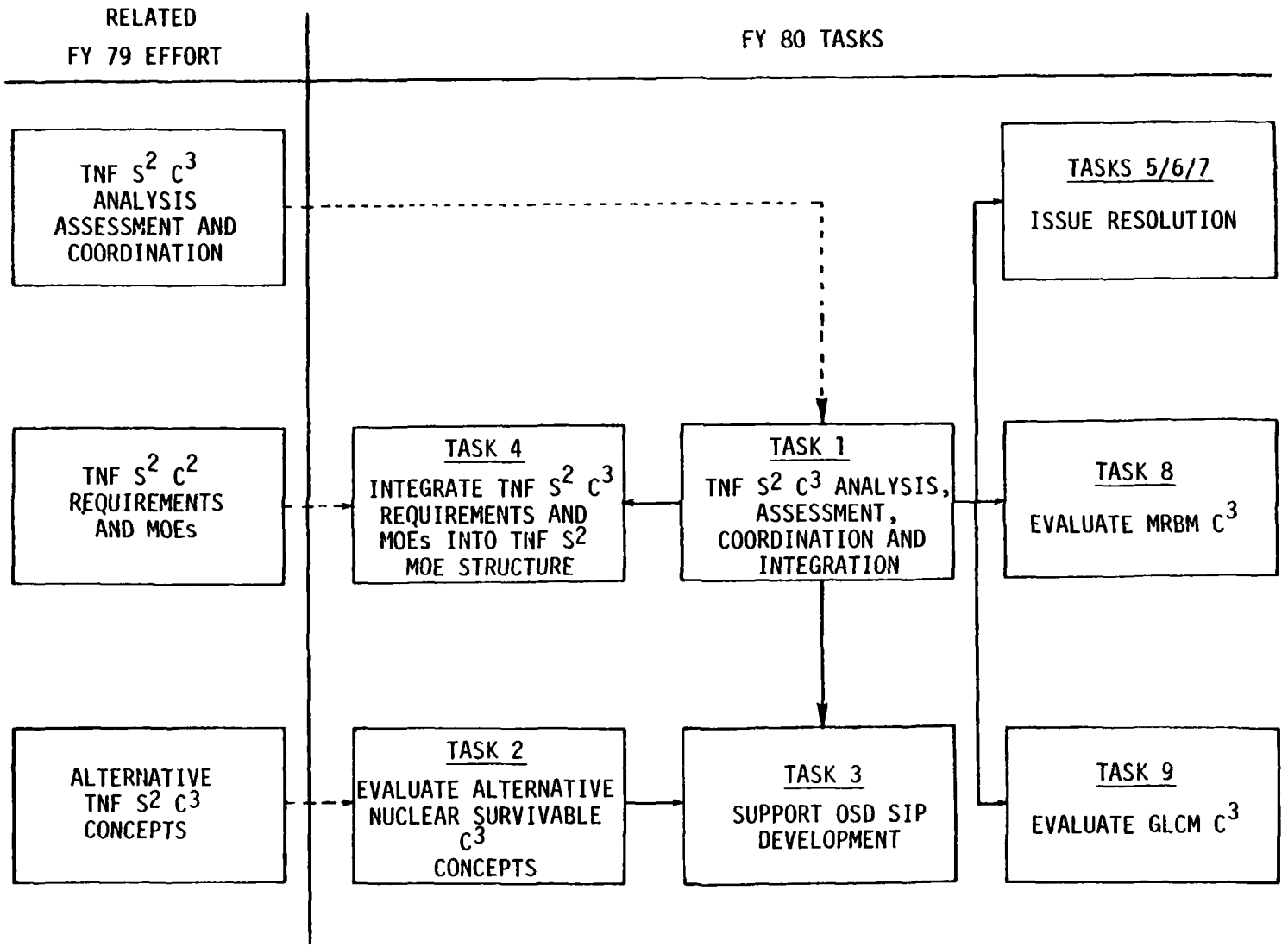

Figure 2-1. Interrelationships among candidate tasks for FY-80.

gram, the results of evaluation and test, as well as changes in the threat, TNF force structure, TNF C^3 systems, political factors, and R&D initiatives will be incorporated. The iterative process of identifying vulnerabilities/deficiencies/limitations, proposing solutions, testing and validating improvement measures, and incorporating results is continuous in nature. In addition, there will be a continuing requirement to reevaluate the currency of MOEs and standards of performance used in the various assessments. Therefore, the FY 81-83 tasks will include:

(1) Redefinition of TNF C^3 requirements in light of program feedback and changes in systems or the threat.

(2) Generation of new or revised MOEs, within the established MOE framework to support new TNF C^3 requirements.

(3) Review prioritization of TNF S^2C^3 issues in light of program feedback and changes to the threat, systems, requirements, policy, operational concepts, etc.

(4) Monitoring of R&D projects and identification of new requirements; development of options and alternatives.

(5) Identification of TNF S^2C^3 issues which require models/simulations but which cannot be satisfied by existing capabilities, development and operation of new models/simulations as required.

(6) Conduct of piggyback monitoring/participation in exercises/tests; analysis of results; feedback.

(7) Reevaluation of alternative concepts in light of program feedback and changes in threat, systems, requirements, etc.

(8) Determination of best means for resolving developing issues and validating improvement measures; planning specific tests; assisting in conduct of test programs; feedback.

2.5 SCHEDULE

It is recognized that the future course of the TNF S^2C^3 Program will be dependent upon the results of early program efforts and the incor-

poration of those results into program planning and direction. Therefore, the proposed schedule presented in Figure 2-2 must be considered as a "working schedule" which is subject to modification as the program develops. The broken lines in Figure 2-2 reflect areas where reevaluation will be an ongoing effort and redefinition will be accomplished as required.

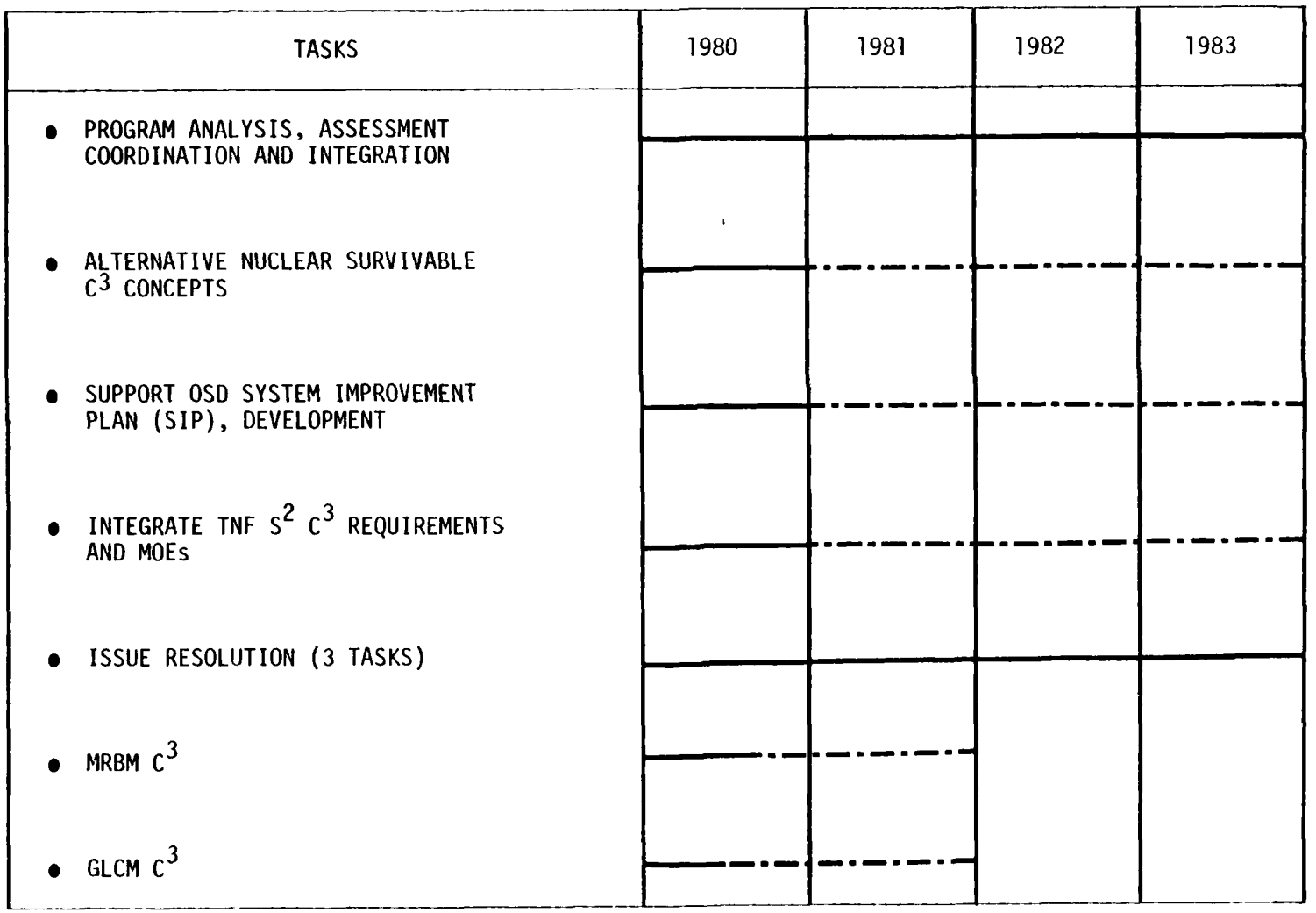

Figure 2-2. TNF S^2C^3 Program schedule.

APPENDIX 1
FISCAL YEAR 1980 TNF S^2C^3 TASKS

INTRODUCTION

This appendix presents detailed statements of the activities planned for accomplishment during Fiscal Year 1980 under the auspices of the TNF S^2C^3 Program. Specific requirements are described for each task and additional background information is provided where appropriate.

TASKS

The nine tasks identified are presented on the individual pages that follow.

Task 1: TNF S^2C^3 Program analysis, assessment, coordination and integration. Under this task, the contractor will:

(1) Review issue definition and prioritization. On a continuing basis, review TNF S^2C^3 deficiencies, shortfalls, and limitations along with potential improvement measures to maintain an active list of TNF S^2C^3 issues. Apply the agreed criteria for establishing the priority of specific issues to update the prioritization of TNF S^2C^3 issues. Assist DNA in coordinating revised issue lists with appropriate commands and agencies. Document and disseminate to all program participants updated agreed issue lists as required.

(2) Monitor relevant and ongoing assessments. Monitor ongoing assessments and evaluate applicability to TNF S^2C^3 Program objectives. Evaluate potential modifications to ongoing assessments which would enhance their applicability to TNF S^2C^3 issues and objectives. Document and disseminate to all program participants information about the availability, applicability, and findings of the relevant ongoing assessments.

(3) Evaluate TNF S^2C^3 Program requirements for models/simulations. Using program feedback, evaluate those TNF S^2C^3 issues for which modeling and simulation techniques appear to be an appropriate methodology. Research available models/simulations to determine specific applicability to specific TNF S^2C^3 issues. Document those TNF S^2C^3 issues for which new models/simulations are required.

(4) Provide TNF S^2C^3 Program coordination. Continue to assist DNA in scoping, task integration, and program management by providing appropriate status reports, briefing materials, point papers, and management tools/techniques as required. Update the TNF S^2C^3 Program Management Plan as necessary to reflect program feedback; to accommodate changes in the TNF, threat, or other circumstances; and to provide new program

direction based on lessons learned. Analyze and collate the results of all TNF S^2C^3 Program efforts and insure that these results are properly disseminated so that they can be incorporated into appropriate DoD planning. Propose explicit recommendations for forwarding to appropriate commands and agencies responsible for implementing improvement measures. Coordinate TNF S^2C^3 Program results to preclude duplication of effort, to take maximum advantage of available data, and to fill data "gaps". Reevaluate TNF C^3 requirements, standards of performance, and MOEs to insure that the factors being employed are the most current and accurate available. Reassess the TNF S^2C^3 list of prioritized issues to insure that assessment results are being properly applied and that newly identified factors which impact on specific issues or priority are being accommodated. Provide updated lists of TNF S^2C^3 issues for DNA coordination with appropriate commands and agencies. Develop guidelines and revised schedules of tasks based on program feedback and accomplishments. Monitor and assist coordination of TNF S^2C^3 Program efforts with efforts under the overall TNF S^2 and other appropriate programs. Maintain liaison with TNF S^2 Program management to insure coordination of effort toward enhanced TNF effectiveness.

Task 2: Evaluate alternative nuclear survivable C^3 concepts for TNF. Under this task, the contractor will:

(1) Continue the effort begun in FY 78 and developed in FY 79.

(2) Continue to evaluate TNF C^3 requirements and applicable survivability and security considerations in the light of program feedback (including changes in systems, threat, requirements) to evaluate alternative concepts for nuclear survivable C^3 for the theater nuclear forces.

(3) Evaluate the operational aspects, cost trade-offs, and force effectiveness considerations for identified alternative concepts.

(4) Consider feedback from test programs and other evaluations/assessments to update alternative concepts and R&D options to meet changing requirements and circumstances.

(5) Continue to collate those TNF C^3 survivability and security limitations, deficiencies, and shortfalls for which no improvement measure is available now or expected in the near future.

(6) Define an experimental test program designed to validate the operational feasibility of the proposed C^3 concepts.

(7) Identify and collate long range R&D requirements and develop specific long range R&D options.

(8) Evaluate candidate R&D options with respect to operational considerations, cost, time requirements, and potential impact on TNF C^3 effectiveness.

(9) Document alternative concepts and revise plans for R&D activities as required to support TNF S^2C^3 Program objectives.

Task 3: Support development of the OSD System Improvement Plan (SIP) for TNF C^3 in Europe.

Under this task, the contractor will:

(1) Provide direct support to OSD-directed efforts to develop a System Improvement Plan (SIP) for European Theater Nuclear Force C^3. In particular, this effort should focus on survivability and vulnerability aspects of TNF C^3 systems and facilities in the context of a full spectrum of potential threat environments.

(2) As a minimum, provide survivability requirements (in the form of A-level specifications) for essential TNF C^3 systems and facilities in a nuclear threat environment.

(3) Identify and analyze alternative survivability concepts for both U.S. and NATO TNF C^3 systems and facilities.

(4) Coordinate with Task 7 efforts to insure that the requirements for survivability are effectively satisfied.

(5) Respond to specific SIP requirements on an "as required" basis and as identified and assigned by the DNA Program Manager.

(6) Document the results of all efforts under this task in the format to be determined by DNA.

Task 4: Integrate TNF S^2C^3 requirements and MOEs with overall TNF S^2 MOE structure.

Under this task, the contractor will:

(1) Review the overall MOE framework developed for the TNF S^2 Program to provide a means for assessing the impact of potential improvements on the overall TNF through the use of probabilistic MOEs for security, survivability, unit availability, unit effectiveness, and overall force effectiveness.

(2) Develop a methodology for incorporating the C^3 requirements and MOEs developed during FY 79 into the larger TNF S^2 framework. (C^3 is one of the major areas to be so incorporated; the other areas include weapons, delivery systems, logistics, and target acquisition).

(3) Identify TNF S^2 systemic and functional MOEs affected by C^3 considerations.

(4) Classify C^3 MOEs according to whether they are process, systemic, or functional in the context of the TNF S^2 methodology.

(5) Integrate C^3 MOEs within the TNF S^2 MOE framework to ensure adequate representation of C^3 in the overall TNF S^2 assessment process. In particular, this will make it possible to compare the effects on overall TNF effectiveness of different or competing C^3 improvements or of C^3 improvements vs. improvements in other TNF areas.

Task 5: Develop Issue Evaluation Plan (IEP) to address the issue of insuring Operational Security (OPSEC) for C^3 elements of the TNF; and conduct issue evaluation.

Under this task, the contractor will:

(1) Develop an Issue Evaluation Plan (IEP) which addresses the issue of insuring Operational Security (OPSEC) for C^3 elements of the TNF and includes at least the following information:

(a) Statement of Objectives

(b) Definition of Threat Spectrum

(c) Identification of Known Vulnerabilities

(d) Description of Related Efforts

(e) Examination of Policy Implications

(f) Examination of Alternative Solutions to Identified Vulnerabilities

(g) Identification of Appropriate MOEs

(h) Estimated Life-Cycle Costs of Potential Equipment

(i) Results of Preliminary Analysis including Consideration of Mission Requirements

(j) Recommendations for Issue Resolution (Test, Analysis, Simulation, Combination, etc.)

(k) Milestone Schedule

(l) Test/Assessment Plan Outline.

(2) Provide the IEP to DNA for coordination with appropriate commands and agencies.

(3) When directed by DNA, develop specific test/analysis plans for resolution and validation of the issue of insuring Operational Security (OPSEC) for C^3 elements of the TNF. The test/assessment plan should:

(a) To the extent possible, emphasize the use of operationally realistic testing to resolve issues and validate improvement measures.

(b) Consider application of a full spectrum of assessment methodologies to insure that there will be no data "gaps".

(c) Determine critical questions and areas of risk and develop appropriate assessment procedures to answer the questions and minimize the risks.

(d) Develop detailed objectives, planning schedules, and milestones for issue resolution and validation.

(e) Develop instrumentation and special equipment requirements lists.

(f) Identify any other special or unique requirements for issue resolution and validation.

(4) Following the guidance of the DNA Program Manager, and consistent with the approved test/assessment plan, assist in the conduct of selected tests and analyses to resolve the issue of insuring OPSEC for C^3 elements of the TNF.

These duties shall include:

(a) Conduct necessary analyses

(b) If physical testing is appropriate, collect necessary data and perform advisory functions during conduct of tests.

(c) Be prepared to recommend deviations from the test/assessment plan if required to meet TNF S^2C^3 Program and IEP objectives.

(d) Collate, reduce and evaluate the data collected during test, research, or assessment.

(e) Document the test/assessment results and identify continuing unresolved aspects of the issue of insuring OPSEC for C^3 elements of the TNF.

(5) Special considerations for this issue include:

(a) Electronic and physical characteristics of TNF C^3 equipment.

(b) C^3 procedures and routines for insuring security and readiness.

(c) Peacetime, transition, and wartime C^3 procedures.

(d) Training and exercises

(e) Use of deceptive practices

(f) Use of non-U.S. radio equipment

(g) Probability of TNF unit detection and identification as a function of C^3 activities (including relocation of weapons or key command personnel, increase in message traffic, particular message patterns, and the use of unique equipment associated with nuclear weapons).

Task 6: Develop Issue Evaluation Plan (IEP) to address the issue of insuring survivability for TNF C^3 facilities; and conduct issue evaluation.

Under this task, the contractor will:

(1) Develop an Issue Evaluation Plan (IEP) which addresses the issue of insuring survivability for TNF C^3 facilities and includes at least the following information:
   (a) Statement of Objectives
   (b) Definition of Threat Spectrum
   (c) Identification of Known Vulnerabilities
   (d) Description of Related Efforts
   (e) Examination of Policy Implications
   (f) Examination of Alternative Solutions to Identified Vulnerabilities
   (g) Identification of Appropriate MOEs
   (h) Estimated Life-Cycle Costs of Potential Equipment Requirements
   (i) Results of Preliminary Analysis including Consideration of Mission Requirements
   (j) Recommendations for issue Resolution (Test, Analysis, Simulation, Combination, etc.)
   (k) Milestone Schedule
   (l) Test/Assessment Plan Outline.

(2) Provide the IEP to DNA for coordination with appropriate commands and agencies.

(3) When directed by DNA, develop specific test/analysis plans for resolution and validation of the issue of insuring survivability for TNF C^3 facilities. The test/assessment plan should:
   (a) To the extent possible, emphasize the use of operationally realistic testing to resolve issues and validate improvement measures.

(b) Consider application of a full spectrum of assessment methodologies to insure that there will be no data "gaps".

(c) Determine critical questions and areas of risk and develop appropriate assessment procedures to answer the questions and minimize the risks.

(d) Develop detailed objectives, planning schedules, and milestones for issue resolution and validation.

(e) Develop instrumentation and special equipment requirements lists.

(f) Identify any other special or unique requirements for issue resolution and validation.

(4) Following the guidance of the DNA Program Manager, and consistent with the approved test/assessment plan, assist in the conduct of selected tests and analysis to resolve the issue of insuring survivability for TNF C^3 facilities.
These duties shall include:

(a) Conduct necessary analysis.

(b) If physical testing is appropriate, collect necessary data and perform advisory functions during conduct of tests.

(c) Be prepared to recommend deviations from the test/assessment plan if required to meet TNF S^2C^3 Program and IEP objectives.

(d) Collate, reduce and evaluate the data collected during test, research, or assessment.

(e) Document the test/assessment results and identify continuing unresolved aspects of the issue of insuring survivability for TNF C^3 facilities.

(5) Special considerations for this issue include:

(a) Alternative measures for enhancing survivability (e.g., hardening, mobility, redundancy, etc.)

(b) Colocation of headquarters (wartime-peacetime and U.S.-NATO).

(c) Continuity of operations planning.

(d) Planning for survivable war headquarters.

(e) Role of airborne command posts.

(f) Vulnerability of isolated communications nodes.

(g) Full spectrum of threats.

(h) Requirement for "balanced" survivability

- Within the TNF C^3 structure
- Between TNF C^3 structure and other TNF elements

Task 7: Develop Issue Evaluation Plan (IEP) to address the issue of insuring appropriate support to the requirement for positive control of U.S. nuclear weapons in Europe; and conduct issue evaluation. Under this task, the contractor will:

(1) Develop an Issue Evaluation Plan (IEP) which addresses the issue of insuring appropriate C^3 support to the requirement for positive control of U.S. nuclear weapons in Europe and includes at least the following information.

(a) Statement of Objectives,

(b) Definition of Threat Spectrum,

(c) Identification of Known Vulnerabilities,

(d) Description of Related Efforts,

(e) Examination of Policy Implications,

(f) Examination of Alternative Solutions to Identified Vulnerabilities

(g) Identification of Appropriate MOEs,

(h) Estimated Life-Cycle Costs of Potential Equipment Requirements,

(i) Results of Preliminary Analysis including Consideration of Mission Requirements,

(j) Recommendations for Issue Resolution (Test, Analysis, Simulation, Combination, etc.), and

(k) Milestone Schedule.

(l) Test/Assessment Plan Outline

(1) Provide the IEP to DNA for coordination with appropriate commands and agencies.

(2) When directed by DNA, develop specific test/analysis plans for resolution and validation of the issue of insuring appropriate C^3 support to the requirement for positive control of U.S. nuclear weapons in Europe. The test/assessment plan should:

(a) To the extent possible, emphasize the use or operationally realistic testing to resolve issues and validate improvement measures.

(b) Consider application of a full spectrum of assessment methodologies to insure that there will be no data "gaps".

(c) Determine critical questions and areas of risk and develop appropriate assessment procedures to answer the questions and minimize the risks.

(d) Develop detailed objectives, planning schedules, and milestones for issue resolution and validation.

(e) Develop instrumentation and special equipment requirements lists.

(f) Identify any other special or unique requirements for issue resolution and validation.

(3) Following the guidance of the DNA Program Manager, and consistent with the approved test/assessment plan, assist in the conduct of selected tests and analysis to resolve the issue insuring appropriate C^3 support to the requirement for positive control of U.S. nuclear weapons in Europe.

These duties shall include:

(a) Conduct necessary analysis.

(b) If physical testing is appropriate, collect necessary data and perform advisory functions during conduct of tests.

(c) Be prepared to recommend deviations from the test/assessment plan if required to meet TNF S^2 C^3 Program and IEP objectives.

(d) Collate, reduce and evaluate the data collected during test, research, or assessment.

(e) Document the test/assessment results and identify continuing unresolved aspects of the issue of insuring appropriate C^3 support to the requirement for positive control of U.S. nuclear weapons in Europe.

(4) Special considerations for this issue include:

(a) Peacetime-wartime-transition requirements.

(b) The role of dedicated custodial communications systems.

(c) Custodial procedures.

(d) Nuclear Weapons Storage site special C^3 requirements.

(e) Elements of positive control.

(f) Programs presently underway, in the Department of the Army and the Defense Communications Agency, which are addressing various aspects of this issue.

Task 8: Evaluate C^3 requirements for potential MRBM deployment.

Under this task, the contractor will:

(1) Establish close and continuing liaison with appropriate commands, activities and agencies involved in the potential deployment of MRBMs in Europe.

(2) Evaluate planned operational concepts and procedures for employment of the MRBM to develop specific C^3 operational, functional, survivability and security requirements.

(3) Evaluate the capability of current and programmed C^3 systems (including tactical organic systems) to meet the C^3 requirements developed in step (2) above.

(4) Identify performance capability shortfalls and recommend system/equipment/procedural alternatives which would serve to correct such shortfalls.

(5) Document the results of the above evaluation and highlight key transition issues as well as unresolved C^3 problem areas remaining with respect to MRBM deployment.

(6) Identify R&D effort required to overcome any existing technological shortfalls in the C^3 system concepts recommended for the support of the MRBM system.

Task 9: Evaluate C^3 requirements for potential GLCM deployment.

Under this task, the contractor will:

(1) Establish close and continuing liaison with appropriate commands, activities and agencies involved in the potential deployment of GLCMs in Europe.

(2) Evaluate planned operational concepts and procedures for employment of the GLCM to develop specific C^3 operational, functional, survivability and security requirements.

(3) Evaluate the capability of current and programmed C^3 systems (including tactical organic systems) to meet the C^3 requirements developed in step (2) above.

(4) Identify performance capability shortfalls and recommend system/equipment/procedural alternatives which would serve to correct such shortfalls.

(5) Document the results of the above evaluation and highlight key transition issues as well as unresolved C^3 problem areas remaining with respect to GLCM deployment.

(6) Identify R&D effort required to overcome any existing technological shortfalls in the C^3 system concepts recommended for the support of the GLCM system.

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